

WHAT IS CLAIMED IS:

1. A method of transmitting a message through a common packet channel (CPCH) in a mobile communication system, comprising:

receiving status information of each of a plurality of CPCHs from the system;

5 selecting one of the plurality of CPCH, based on the status information;

transmitting a signature to the system to request allocation of the selected CPCH, where the signature has one-to-one correspondence to each of a plurality of scrambling codes for the CPCH;

receiving a channel allocation indicator from the system; and,

10 transmitting a message to the system through at least one allocated CPCH.

2. The method of claim 1, wherein each of the plurality of scrambling codes for the CPCH has a one-to-one correspondence to an access sub-channel used by an access preamble part of the CPCH.

3. The method of claim 1, wherein the signature used to request allocation of a CPCH comprises an access preamble part of the CPCH.

4. The method of claim 1, wherein each of the plurality of scrambling codes is used to scramble message parts of the CPCH.

5. A method for allocating common packet channels (CPCH), comprising:
transmitting status information of a plurality of CPCHs from a system to at least one mobile station;

selecting one of the plurality of CPCHs based on the status information, and
5 transmitting an access preamble (AP) with a signature from the at least one mobile station to the system to request allocation of the selected CPCH, the signature mapping with at least one scrambling code;

transmitting a channel allocation indicator channel (CA-ICH) of at least one CPCH to be allocated from the system to the mobile station, the CA-ICH having a
10 signature mapped with at least one scrambling code; and

transmitting a message from the mobile station to the system through at least one available physical channel using the at least one scrambling code of the CA-ICH.

6. The method of claim 5, further comprising:
transmitting an acknowledgment signal from the system to the mobile station to indicate that the desired CPCH is available, before transmitting the CA-ICH;

transmitting a collision detection preamble (CD-P) with a signature from the
5 mobile station to the system in response to the acknowledgment signal, the signature
mapping with at least one scrambling code; and

determining whatever a collision has occurred when only one CD-P is
received transmitting a signature equal to that of the received CD-P to the mobile station
through a collision detection acquisition indicator channel (CD-AICH) transmitting a
signature equal to that of the CD-P having the highest power among received CD-Ps from
10 the system to the base station through the CD-AICH.

7. The method of claim 6, wherein it is determined that a collision has not
occurred when only one CD-P is received, and it is determined that a collision has
occurred when more than one CD-Ps received.

8. The method of claim 7, further comprising transmitting a signature equal
to that of the received CD-P to the mobile station through a collision detection
acquisition indicator channel (CD-AICH) if no collision has occurred and transmitting
a signature equal to that of the CD-P having the highest power among received CD-Ps
5 from the system to the base station through the CD-AICH if a collision has occurred.

9. A method for allocating common packet channels (CPCHs), comprising:
transmitting status information of the CPCHs from a system to a mobile
station;

selecting a specific CPCH to be used based on the status information and
generating an access presample (AP), comprising a signature indicative of the selected
CPCH, minimum spreading factor of the specific CPCH, and a maximum data rate, the
signature mapping with scrambling codes having a channelization OVSF code tree in a
message part of the specific CPCH, and a channelization code of a data part and a control
part in the message part being selected in the code tree; and

transmitting the AP containing the signature from the system to the mobile
station to request allocation of the specific CPCH.

10. The method of claim 9, wherein the mobile station maps signatures of the
CPCHs that can be serviced by the system with different scrambling codes.

11. The method of claim 9, wherein the mobile station divides a specific
scrambling code into chip codes of a prescribed length, and the signatures of the CPCHs
are mapped with the divided scrambling chip codes.

12. The method of claim 9, wherein the mobile station selects one of codes located in an up branch from a node having a spreading factor of 2 in a code tree of the scrambling codes as a channelization code of the data part, and selects a code located last among the codes of a down branch from the node having the spreading factor of 2 as a channelization code of the control part.

13. The method of claim 9, wherein the mobile station selects a code located last among a plurality of codes in an up branch from a node having a spreading factor of 2 as a channelization code of the control part, selects a lower node of two nodes having a spreading factor of 4 from a node having a spreading factor of 2, and selects one of a plurality of codes in the up branch from the selected lower node as a channelization code of the data part.

14. The method of claim 9, wherein a number of the scrambling codes mapped with the signature is equal to 32 divided by the minimum spreading factor.

15. A method for allocating common packet channels (CPCs), comprising:
transmitting status information of a plurality of CPCs from a system to
a mobile station;

selecting a desired CPCH in accordance with the status information;

5 transmitting an access preamble (AP), comprising a signature indicative of the selected CPCH, a minimum spreading factor of the CPCH, and a maximum data rate, to the system;

transmitting a channel allocation indicator channel (CA-ICH) of at least one of the plurality of CPCHs to be allocated, from the system to the mobile station in accordance with the minimum spreading factor and the maximum data rate received from the mobile station, the CA-ICH comprising a signature mapped with at least one scrambling code having a channelization orthogonal variable spreading factor (OVSF) code tree in a message part of the CPCH; and

10 transmitting a message from the mobile station to the system using at least one corresponding physical channel in accordance with the CA-ICH, channelization codes of a data part and a control part in the message part being selected in the code tree.

15 16. The method of claim 15, wherein the system maps respective signatures of the CA-ICH with different scrambling codes.

17. The method of claim 15, wherein the system divides a specific scrambling code into chip codes of a prescribed length, and the respective signatures of the CA-ICH are mapped with the chip codes.

18. The method of claim 15, wherein the mobile station selects one of a plurality of codes located in an up branch from a node having a spreading factor of 2 in a code tree of the scrambling codes as a channelization code of the data part, and selects a code located last among a plurality of codes of a down branch from the node having the spreading factor of 2 as a channelization code of the control part.

19. The method of claim 15, wherein the mobile station selects a code located last among a plurality of codes in an up branch from a node having a spreading factor of 2 as a channelization code of the control part, selects a lower node of two nodes having a spreading factor of 4 from a node having a spreading factor of 2, and selects one of a plurality of codes in the up branch from the selected lower node as a channelization code of the data part.

20. The method of claim 15, wherein the number of the scrambling codes mapped with the respective signatures of the CA-ICH is equal to 32 divided by the minimum spreading factor.

21. The method of claim 15, wherein the mobile station selects the desired CPCH and transmits the AP to the system.

22. A method for allocating Common Packet Channels (CPCHs), comprising:
receiving group information of a plurality of CPCHs from a system;
transmitting an access preamble (AP) which indicates a group to be used and
a desired transmission rate in accordance with the received group information;

5 selecting at least one of the plurality of CPCHs to be allocated in a group designated by the AP from the mobile station and transmitting a channel allocation indicator channel (CA-ICH) of the selected CPCH, the CA-ICH comprising a signature mapped with scrambling codes; and

10 transmitting a message to the system through at least one corresponding physical channel in accordance with the CA-ICH.

23. The method of claim 22, wherein the AP is transmitted from the mobile station to the system.

24. A method for allocating common packet channels, comprising:

transmitting a maximum data rate and a minimum spreading factor of a desired channel from a mobile station to a system to request allocation of the channel;

transmitting a signal available for allocation of the requested channel from the system to the mobile station in response to the request;

mapping a collision detection preamble (CP-P) to prevent channel collision by a specific scrambling code set and transmitting the CD-P from the mobile station to the system;

selecting a scrambling code from the scrambling code set designated by the CD-P transmitted from the mobile station and mapping the selected scrambling code by a channel allocation indicator channel (CA-ICH) to transmit the scrambling code to the mobile station; and

transmitting a message from the mobile station to the system using the scrambling code designated by the transmitted CA-ICH.

25. The method of claim 24, wherein signatures of the CD-P are one-to-one mapped with the scrambling code sets in accordance with a number of the scrambling code sets, or two signatures are mapped to indicate a specific scrambling code set.

26. A method for allocating common packet channels (CPCs) comprising:
transmitting one of a maximum data rate and a minimum spreading factor
of a desired channel from a mobile station to a system to request allocation of the channel;
determining at the system whether allocation of the requested channel is
5 available and responding to the mobile station;
mapping a collision detection preamble (CD-P) for preventing a channel
collision with a specific scrambling code and transmitting the CD-P from the mobile
station to the system;
selecting a scrambling code set that can use the scrambling code designated
10 by the CD-P transmitted by the system to map with a channel allocation indicator
channel (CA-ICH) and transmitting the scrambling code set to the mobile station; and
transmitting a message from the mobile station to the system using a
scrambling code selected from the scrambling code set designated by the transmitted CA-
ICH.

27. The method of claim 26, wherein each signature of the CA-ICH is one-to-one mapped with one scrambling code set in accordance with a number of available scrambling code sets, or a plurality of signatures are mapped to indicate a specific scrambling code set.